

PROJECT RISK MANAGEMENT

RISK MANAGEMENT IS THE IDENTIFICATION, ASSESSMENT AND PRIORITIZATION OF RISKS AS THE EFFECT OF UNCERTAINTY ON OBJECTIVES

RISKS CAN COME FROM UNCERTAINTY IN FINANCIAL MARKETS, PROJECT FAILURES AT ANY PHASE IN DESIGN, DEVELOPMENT, PRODUCTION, LEGAL LIABILITIES, CREDIT RISKS, ACCIDENTS, NATURAL CAUSES, DISASTERS ETC.

THE STRATEGIES TO MANAGE RISK TYPICALLY INCLUDE TRANSFERRING THE RISK TO ANOTHER PARTY, AVOIDING THE RISK, REDUCING THE NEGATIVE EFFECT (OR) PROBABILITY OF THE RISK.

METHOD

- (1) IDENTIFY, CHARACTERIZE AND ASSESS THREATS
- (2) ASSESS THE VULNERABILITY OF CRITICAL ASSETS TO SPECIFIC THREATS
- (3) DETERMINE THE RISK (EXPECTED LIKELIHOOD AND CONSEQUENCES OF SPECIFIC TYPES OF ATTACKS ON SPECIFIC ASSETS).

(4) IDENTIFY

(5) PRIORIT

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RISK MAN

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ASSESSMENT AND PRIORITIZATION OF OBJECTIVES

FINANCIAL MARKETS, PROJECT FAILURES, REPUTATION, LEGAL LIABILITIES, DISASTERS ETC.

TYPICALLY INCLUDE TRANSFERRING THE RISK, REDUCING THE RISK.

ASSESS THREATS

OF CRITICAL ASSETS TO SPECIFIC

LIKELIHOOD AND CONSEQUENCES

(SOME TYPES OF ATTACKS ON SPECIFIC ASSETS).

(4) IDENTIFY WAYS TO REDUCE THOSE RISKS

(5) PRIORITIZE RISK REDUCTION MEASURES BASED ON A STRATEGY

PRINCIPLE OF RISK MANAGEMENT

RISK MANAGEMENT SHOULD

- CREATE VALUE — RESOURCES EXPANDED TO MITIGATE RISK SHOULD BE LESS THAN THE CONSEQUENCE OF INACTION
- BE AN INTEGRAL PART OF ORGANIZATIONAL PROCESSES
- BE PART OF DECISION MAKING
- ADDRESS UNCERTAINTY AND ASSUMPTIONS.
- BE SYSTEMATIC AND STRUCTURED
- BE TAILORABLE
- TAKE HUMAN FACTORS INTO ACCOUNT
- BE TRANSPARENT AND INCLUSIVE

- BE DYNAMIC ITERATIVE
- BE CAPABLE OF ENHANCEMENT
- BE CONTINUALLY

RISK ANALYSIS

- SOURCE AND
- PROBLEM AND

OBJECTIVE BASED

- HOW AN ORGANIZATION IS ACHIEVING (OR) COMPETING

SCENARIO

WAYS TO REDUCE THOSE RISKS

RISK REDUCTION MEASURES BASED ON
OF RISK MANAGEMENT

MENT SHOULD
VALUE — RESOURCES EXPANDED TO MITIGATE
RISK SHOULD BE LESS THAN THE
CONSEQUENCE OF INACTION.
EGAL PART OF ORGANIZATIONAL

OF DECISION MAKING
UNCERTAINTY AND ASSUMPTIONS.

EMATIC AND STRUCTURED
LORABLE

HUMAN FACTORS INTO ACCOUNT
RANSSPARENT AND INCLUSIVE

- BE DYNAMIC ITERATIVE AND RESPONSIVE TO CHANGE
- BE CAPABLE OF CONTINUAL IMPROVEMENT AND ENHANCEMENT
- BE CONTINUALLY (OR) PERIODICALLY RE-ASSESSED.

RISK ANALYSIS

- SOURCE ANALYSIS — RISK SOURCES MAY BE INTERNAL (OR) EXTERNAL TO THE SYSTEM.
- PROBLEM ANALYSIS — RISKS ARE RELATED TO IDENTIFIED THREAT

OBJECTIVE BASED RISK IDENTIFICATION

- HOW AN EVENT CAN ENDANGER ACHIEVING AN OBJECTIVE PARTLY (OR) COMPLETELY

SCENARIO BASED RISK IDENTIFICATION

RISK ASSES
CONSEQUENCE
RATING
5
CATASTROPHIC
(OBJECTIVE)
PROJECT OBJECTIVE NOT ACHIEVED
(HUMAN)
MULTIPLE FACILITIES SIGNIFICANT IRREVERSIBLE EFFECT TO MORE THAN 50% PERSONS
(FINANCIAL)
50% VARIANCE BUDGET
ENVIRONMENT
VERY SERIOUS LONG TERM IMPACT ON ECOSYSTEM
LEGAL
SIGNIFICANT FIN

RISK ASSESSMENT

CONSEQUENCES

RATING
5

	4	3	2	1
CATASTROPHIC	MAJOR	MODERATE	MINOR	INSIGNIFICANT
(OBJECTIVE) PROJECT OBJECTIVE IS NOT ACHIEVED	OBJECTIVE MAY BE DELAYED BY 50% (OR) MORE	OBJECTIVE DELAYED BY LESS THAN 50%	MILESTONE NOT ACHIEVED	NEGLECTIBLE IMPACT ON MILESTONES
(HUMAN) MULTIPLE FAMILIES (OR) SIGNIFICANT IRREVERSIBLE EFFECT TO MORE THAN 50% PERSONS	SINGLE FAMILTY AND SEVERE IRRESIBLE DISABILITY > 30% TO ONE OR MORE PERSONS	MODERATE IRREVERSIBLE DISABILITY (OR) IMPAIRMENT (< 30%)	SIGNIFICANT BUT REVERSIBLE DISABILITY REQUIRING HOSPITALISATION	NO MEDICAL TREATMENT REQUIRED
(FINANCIAL) 50% VARIANCE TO BUDGET	30% VARIANCE TO BUDGET	20% VARIANCE TO BUDGET	10% VARIANCE TO BUDGET	5% VARIANCE TO BUDGET
ENVIRONMENTAL VERY SERIOUS LONG TERM IMPACT ON ECOSYSTEM	SERIOUS LONG TERM ENVIRONMENTAL IMPACT	SERIOUS MEDIUM TERM IMPACT	MODERATE SHORT TERM EFFECT	MINOR EFFECT ON BIOLOGICAL OR PHYSICAL ENVIRONM -GNT
LEGAL SIGNIFICANT FINES	MAJOR BREACH OF REGULATION	SERIOUS BREACH OF REGULATION	MINOR LEGAL ISSUES	

REPUTATION

SERIOUS PUBLIC (OR) MEDIA OUTCRY
INTERNATIONAL COVERAGE

CONSEQUENCE -
↓ LIKELIHOOD

ALMOST CERTAIN

LIKELY

NEUTRAL

UNLIKELY

RARE

CHANGE AND ASSESSED.

ES MAY BE EXTERNAL

ATED TO GREAT

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CATION

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ANT BUT BLE TY NG ISATION	NO MEDICAL TREATMENT REQUIRED
ARIANCE DGET	5% VARIANCE TO BUDGET
LATE TERM EFFECT	MINOR EFFECT ON BIOLOGICAL OR PHYSICAL ENVIRONM -GNT
OR LEGAL UES	

5	4	3	2	1
<u>REPUTATION</u> SERIOUS PUBLIC LOCAL MEDIA OUTCRY INTERNATIONAL COVERAGE	SERIOUS PUBLIC LOCAL MEDIA OUTCRY	SIGNIFICANT ADVERSE ATTENTION BY MEDIA	MEDIA ATTENTION OF LOCAL CONCERN	MINOR ADVERSE LOCAL PUBLIC LOCAL MEDIA ATTENTION COMPLAINT

SAMPLE RISK SCORING MATRIX

CONSEQUENCE LIKELIHOOD		OVERALL RATING				
		INSIGNIFICANT 1	MINOR 2	MODERATE 3	MAJOR 4	CATASTROPHIC 5
ALMOST CERTAIN	5	MEDIUM (5)	MEDIUM (10)	SIGNIFICANT (15)	HIGH (20)	HIGH (25)
LIKELY	4	LOW (4)	MEDIUM (8)	SIGNIFICANT (12)	SIGNIFICANT (16)	HIGH (20)
NEUTRAL	3	LOW (3)	MEDIUM (6)	MEDIUM (9)	SIGNIFICANT (12)	SIGNIFICANT (15)
UNLIKELY	2	LOW (2)	LOW (4)	MEDIUM (6)	MEDIUM (8)	MEDIUM (10)
RARE	1	LOW (1)	LOW (2)	LOW (3)	LOW (4)	MEDIUM (5)

COMPOSITE RISK

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$$\text{COMPOSITE RISK INDEX} = \text{IMPACT OF RISK EVENT} \times \text{PROBABILITY OF OCCURANCE}$$

RISK OPTIONS

- ① DESIGN A NEW BUSINESS PROCESS WITH ADEQUATE BUILT IN RISK CONTROL AND CONTAINMENT MEASURED FROM THE START
- ② PERIODICALLY RE-ASSESS RISKS THAT ARE ACCEPTED IN ONGOING PROCESSES AS A NORMAL FEATURE OF BUSINESS OPERATIONS AND MODIFY MITIGATION MEASURES.
- ③ TRANSFER RISK TO EXTERNAL AGENCY (INSURANCE COMPANY)
- ④ AVOID RISKS ALTOGETHER (CLOSING DOWN A PARTICULAR HIGH RISK BUSINESS AREA)

POTENTIAL RISK TREATMENTS

- ① AVOIDANCE (ELIMINATE, WITHDRAW FROM (OR) NOT BECOME INVOLVED)
- ② REDUCTION (OPTIMIZE, MITIGATE)
- ③ SHARING (TRANSFER / OUTSOURCE / INSURE)
- ④ RETENTION (ACCEPT AND BUDGET)

MAJOR 4	CATASTROPHIC 5
HIGH (20)	HIGH (25)
SIGNIFICANT (16)	HIGH (20)
SIGNIFICANT (12)	SIGNIFICANT (15)
MEDIUM (8)	MEDIUM (10)
LOW (4)	MEDIUM (5)

	5	4	3	2	1
<u>REPUTATION</u>	SERIOUS PUBLIC LOW MEDIA OUTCRY INTERNATIONAL COVERAGE	SERIOUS PUBLIC LOW MEDIA OUTCRY	SIGNIFICANT ADVERSE ATTENTION BY MEDIA	MEDIA ATTENTION OF LOCAL CONCERN	MINOR ADVERSE LOCAL PUBLIC LOW MEDIA ATTENTION COMPLAINT

SAMPLE RISK SCORING MATRIX

CONSEQUENCE ↓ LIKELIHOOD		OVERALL RATING				
		INSIGNIFICANT 1	MINOR 2	MODERATE 3	MAJOR 4	CATASTROPHIC 5
ALMOST CERTAIN	5	medium (5)	medium (10)	significant (15)	high (20)	high (25)
LIKELY	4	low (4)	medium (8)	significant (12)	significant (16)	high (20)
NEUTRAL	3	low (3)	medium (6)	medium (9)	significant (12)	significant (15)
UNLIKELY	2	low (2)	low (4)	medium (6)	medium (8)	medium (10)
RARE	1	low (1)	low (2)	low (3)	low (4)	medium (5)

COMPOSITE RISK INDEX = IMPACT OF RISK EVENT × PROBABILITY OF OCCURANCE

RISK OPTIONS

- DESIGN A NEW BUSINESS PROCESS WITH ADEQUATE BUILT IN RISK CONTROL AND CONTAINMENT MEASURED FROM THE START
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- REDUCTION (OPTIMIZE, MITIGATE)
- SHARING (TRANSFER / OUTSOURCE / INSURE)
- RETENTION (ACCEPT AND BUDGET)

ELECTRICAL

	3	2	1
SEVERE	SIGNIFICANT ADVERSE ATTENTION BY MEDIA	MEDIA ATTENTION OF LOCAL CONCERN	MINOR ADVERSE LOCAL PUBLIC (OR) MEDIA ATTENTION COMPLAINT

EXAMPLE RISK SCORING MATRIX

SIGNIFICANT	OVERALL RATING			
	MINOR (2)	MODERATE (3)	MAJOR (4)	CATASTROPHIC (5)
High (5)	Medium (10)	SIGNIFICANT (15)	HIGH (20)	<u>HIGH (25)</u>
(4)	Medium (8)	SIGNIFICANT (12)	SIGNIFICANT (16)	HIGH (20)
(3)	Medium (6)	Medium (9)	SIGNIFICANT (12)	SIGNIFICANT (15)
(2)	Low (4)	Medium (6)	Medium (8)	Medium (10)
(1)	Low (2)	Low (3)	Low (4)	Medium (5)

COMPOSITE RISK INDEX = IMPACT OF RISK EVENT x PROBABILITY OF OCCURRENCE

RISK OPTIONS

- DESIGN A NEW BUSINESS PROCESS WITH ADEQUATE RISK CONTROL AND CONTAINMENT MEASURED FROM THE
- PERIODICALLY RE-ASSESS RISKS THAT ARE ACCEPTED ONGOING PROCESSES AS A NORMAL FEATURE OF BUSINESS OPERATIONS AND MODIFY MITIGATION MEASURES.
- TRANSFER RISK TO EXTERNAL AGENCY (INSURANCE)
- AVOID RISKS ALTOGETHER (CLOSING DOWN A HIGH RISK BUSINESS)

POTENTIAL RISK TREATMENTS

- AVOIDANCE (ELIMINATE, WITHDRAW FROM (OR))
- REDUCTION (OPTIMIZE, MITIGATE)
- SHARING (TRANSFER / OUTSOURCE / INSURE)
- RETENTION (ACCEPT AND BUDGET)

CREATE RISK MANAGEMENT PLAN

SELECT APPROPRIATE (CONTROL OR) COUNTER MEASURES TO MEASURE EACH RISK.
RISK MITIGATION NEEDS TO BE APPROVED BY THE APPROPRIATE LEVEL OF MANAGEMENT.

THE RISK MANAGEMENT PLAN SHOULD PREPARE APPLICABLE AND EFFECTIVE SECURITY CONTROL FOR MANAGING RISKS.

A GOOD RISK MANAGEMENT PLAN SHOULD CONTAIN A SCHEDULE FOR CONTROL IMPLEMENTATION AND RESPONSIBLE PERSONS FOR THOSE ACTIONS.

ACCORDING TO ISO/IEC 27001, THE STAGE IMMEDIATELY AFTER COMPLETION OF THE RISK ASSESSMENT PHASE CONSISTS OF PREPARING A RISK TREATMENT PLAN WHICH SHOULD DOCUMENT THE DECISIONS ABOUT HOW EACH OF THE IDENTIFIED RISKS SHOULD BE HANDLED.

IMPLEMENTATION

IMPLEMENTATION FOR THE EFFECT OF THE THAT HAVE BEEN RISK ALL RISKS TO ENTITY'S GOALS,

REVIEW AND EVALUATION

INITIAL RISK PRACTICE, EXPERIENCE, CHANGE IN THE POSSIBLE WITH THE RISK

RISK ANALYSIS

RISK ANALYSIS SHOULD BE

MEASURES TO MEASURE EACH RISK.

THE APPROPRIATE LEVEL OF

APPLICABLE AND EFFECTIVE

AND CONTAIN A SCHEDULE
OF PERSONS FOR THOSE ACTIONS.

BE IMMEDIATELY AFTER
THE CASE CONSISTS OF PREPARING

AND SHOULD DOCUMENT THE
IDENTIFIED RISKS SHOULD

IMPLEMENTATION

IMPLEMENTATION FOLLOWS ALL OF THE PLANNED METHODS FOR MITIGATING THE EFFECT OF THE RISKS. PURCHASE INSURANCE POLICIES FOR THE RISKS THAT HAVE BEEN DECIDED TO BE TRANSFERRED TO AN INSURER, AVOID ALL RISKS THAT CAN BE AVOIDED WITHOUT SACRIFICING THE ENTITY'S GOALS, REDUCE OTHERS AND RETAIN THE REST.

REVIEW AND EVALUATION OF THE PLAN

INITIAL RISK MANAGEMENT PLANS WILL NEVER BE PERFECT. PRACTICE, EXPERIENCE AND ACTUAL LOSS RESULTS WILL NECESSITATE CHANGES IN THE PLAN AND CONTRIBUTE INFORMATION TO ALLOW POSSIBLE DIFFERENT DECISIONS TO BE MADE IN DEALING WITH THE RISKS BEING FACED.

RISK ANALYSIS

RISK ANALYSIS RESULTS AND MANAGEMENT PLANS SHOULD BE UPDATED PERIODICALLY.

THE REASONS

- TO EVALUATE WHETHER CONTROLS ARE STILL APPLICABLE
- TO EVALUATE THE POSSIBLE CHANGES IN BUSINESS ENVIRONMENT

LIMITATIONS

THERE IS DISTINCTION BETWEEN RISK AND LOSS. RISK CAN BE MEASURED AND MANAGED, BUT LOSS CANNOT. IF RISKS ARE IMPROPERLY MANAGED, TIME CAN BE WASTED AND RESOURCES CAN BE WASTED THAT ARE NOT LIKELY TO BE RECOVERED.

AREAS OF RISK MANAGEMENT

- CORPORATE FINANCE RISK, MARKET RISK, CREDIT RISK, OPERATIONAL RISK, COMPLIANCE RISK
- SPECIFIED METHODS AND PROCEDURES FOR RISK MANAGEMENT REQUIREMENTS

KNOWN METHODS FOR MITIGATING
ANCE POLICIES FOR THE RISKS
RRED TO AN INSURER,
THOUT SACRIFICING THE
TAIN THE REST.

EVER BE PERFECT.
RESULTS WILL NECESSITATE
FORMATION TO ALLOW
BE MADE IN DEALING

ANAGEMENT PLANS
ALLY.

THE REASONS

- TO EVALUATE WHETHER THE PREVIOUSLY SELECTED SECURITY CONTROLS ARE STILL APPLICABLE AND EFFECTIVE.
- TO EVALUATE THE POSSIBLE RISK LEVEL CHANGE IN THE BUSINESS ENVIRONMENT

LIMITATIONS

THERE IS DISTINCTION BETWEEN RISK AND UNCERTAINTY.
RISK CAN BE MEASURED BY IMPACTS X PROBABILITY.
IF RISKS ARE IMPROPERLY ASSESSED AND PRIORITIZED,
TIME CAN BE WASTED IN DEALING WITH RISK OF LOSSES
THAT ARE NOT LIKELY TO OCCUR.

AREAS OF RISK MANAGEMENT

- CORPORATE FINANCE, OPERATIONAL RISK, VALUE AT RISK, MARKET RISK, CREDIT RISK,
- SPECIFIED METHODS FOR CALCULATING CAPITAL REQUIREMENTS FOR EACH OF THESE COMPONENTS

<u>ENTERPRISE</u>	<u>RISK MANAGEMENT</u>
IN ENTERPRISE OR CIRCUMSTANCE THAT CAN ENTERPRISE IN QUESTION.	RISK MANAGEMENT THAT CAN ENTERPRISE IN QUESTION.
THE PRODUCTS, INTEREST RATE OPERATIONAL RISK.	SERVICE, EX- RISK, ASSET L
IN THE MORE GENERAL A PRE-FORMULATED PLAN TO	GENERAL C PLAN TO
	<u>PROJECT</u>
IN PROJECT MANAGEMENT THE FOLLOWING ACTIVITIES:	MANAGEMENT THE FOLLOWING ACTIVITIES:
- PLANNING PROJECT. RESPONSIBILITIES, A	HOW RISK PLANS SHO RESPONSIBILITIES, A

BY SELECTED SECURITY
EFFECTIVE.

EL CHANGE IN THE

AND UNCERTAINTY.

X PROBABILITY.

ND PRIORITIZED,
TH RISK OF LOSSES

RISK, VALUE AT

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TING CAPITAL

SE COMPONENTS

ENTERPRISE RISK MANAGEMENT

IN ENTERPRISE RISK MANAGEMENT, A RISK IS DEFINED AS A POSSIBLE EVENT OR CIRCUMSTANCE THAT CAN HAVE NEGATIVE INFLUENCES ON THE ENTERPRISE IN QUESTION.

THE PRODUCTS, SERVICE, EXTERNAL IMPACT ON SOCIETY, CREDIT RISK, INTEREST RATE RISK, ASSET LIABILITY MANAGEMENT, MARKET RISK, OPERATIONAL RISK.

IN THE MORE GENERAL CASE, EVERY PROBABLE RISK CAN HAVE A PRE-FORMULATED PLAN TO DEAL WITH ITS POSSIBLE CONSEQUENCES

PROJECT RISK MANAGEMENT

IN PROJECT MANAGEMENT, RISK MANAGEMENT SHOULD INCLUDE THE FOLLOWING ACTIVITIES

- PLANNING HOW RISK WILL BE MANAGED IN THE PARTICULAR PROJECT. PLANS SHOULD INCLUDE RISK MANAGEMENT TASKS

RESPONSIBILITIES, ACTIVITIES AND BUDGET

- ASSIGNING THE RISK
- MAINTAINING LIVE PRO
EACH RISK SHOULD HA
ATTRIBUTES.

- OPENING DATE, T
PROBABILITY AND

- CREATING ANONY

- PREPARING MIT

- SUMMARIZING P
EFFECTIVENESS C
THE EFFORT S

RISK MANAGEM
DISASTERS

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NATURAL DISAST

IS DEFINED AS A POSSIBLE EVENT
INFLUENCES ON THE

ON SOCIETY, CREDIT RISK,
RISK, MARKET RISK,

POSSIBLE RISK CAN HAVE
IT'S POSSIBLE CONSEQUENCES

AGEMENT

AGEMENT SHOULD INCLUDE

MANAGED IN THE PARTICULAR
RISK MANAGEMENT TASKS

BUDGET

- ASSIGNING THE RISK OFFICER

- MAINTAINING LIVE PROJECT RISK DATABASE.

EACH RISK SHOULD HAVE THE FOLLOWING
ATTRIBUTES.

- OPENING DATE, TITLE, SHORT DESCRIPTION,
PROBABILITY AND IMPORTANCE

- CREATING ANONYMOUS RISK REPORTING CHANNEL.

- PREPARING MITIGATION PLANS FOR THE RISKS

- SUMMARIZING PLANNED AND FACED RISKS,
EFFECTIVENESS OF MITIGATION ACTIVITIES &
THE EFFORT SPENT FOR THE RISK MANAGEMENT

RISK MANAGEMENT REGARDING NATURAL
DISASTERS

IT IS IMPORTANT TO ASSESS RISK IN REGARD TO
NATURAL DISASTERS LIKE FLOODS, EARTHQUAKES,

OUTCOMES OF NATURAL DISASTERS
ARE VALUABLE WHEN CONSIDER
BUSINESS INTERRUPTION LOSSES &
EFFECTS ON ENVIRONMENT, INS
PROPOSED COST TO REDUCING T

RISK OFFICER

PROJECT RISK DATABASE.

HAVE THE FOLLOWING

TITLE, SHORT DESCRIPTION,

AND IMPORTANCE

ANONYMOUS RISK REPORTING CHANNEL.

MITIGATION PLANS FOR THE RISKS

PLANNED AND FACED RISKS,

OF MITIGATION ACTIVITIES &

SPENT FOR THE RISK MANAGEMENT

MENT REGARDING NATURAL

IMPORTANT TO ASSESS RISK IN REGARD TO

DISASTERS LIKE FLOODS, EARTHQUAKES,

OUTCOMES OF NATURAL DISASTER RISK ASSESSMENT
ARE VALUABLE WHEN CONSIDERING FUTURE REPAIR COSTS,
BUSINESS INTERRUPTION LOSSES AND OTHER DOWNTIME,
EFFECTS ON ENVIRONMENT, INSURANCE COST AND
PROPOSED COST TO REDUCING THE RISK.

POSITIVE RISK MANAGEMENT

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POSITIVE RISK MANAGEMENT IS AN APPROACH THAT RECOGNIZES THE IMPORTANCE OF THE HUMAN FACTOR AND OF INDIVIDUAL DIFFERENCES IN PROPENSITY FOR RISK TAKING.

FIRSTLY, IT RECOGNIZES THAT ANY OBJECT OR SITUATION CAN BE RENDERED HAZARDOUS BY THE INVOLVEMENT OF SOMEONE WITH AN INAPPROPRIATE DISPOSITION TOWARD RISK.

SECONDLY, IT RECOGNIZES THAT RISK IS AN INEVITABLE AND EVER PRESENT ELEMENT THROUGHOUT LIFE FROM CONCEPTION THROUGH TO THE POINT AT THE END OF LIFE.

THIRDLY, IT RECOGNIZES EVERY INDIVIDUAL HAS A PARTICULAR ORIENTATION TOWARD RISK.

FINALLY, POSITIVE RISK MANAGEMENT RECOGNIZES THAT RISK TAKING IS ESSENTIAL TO ALL ENTERPRISE.

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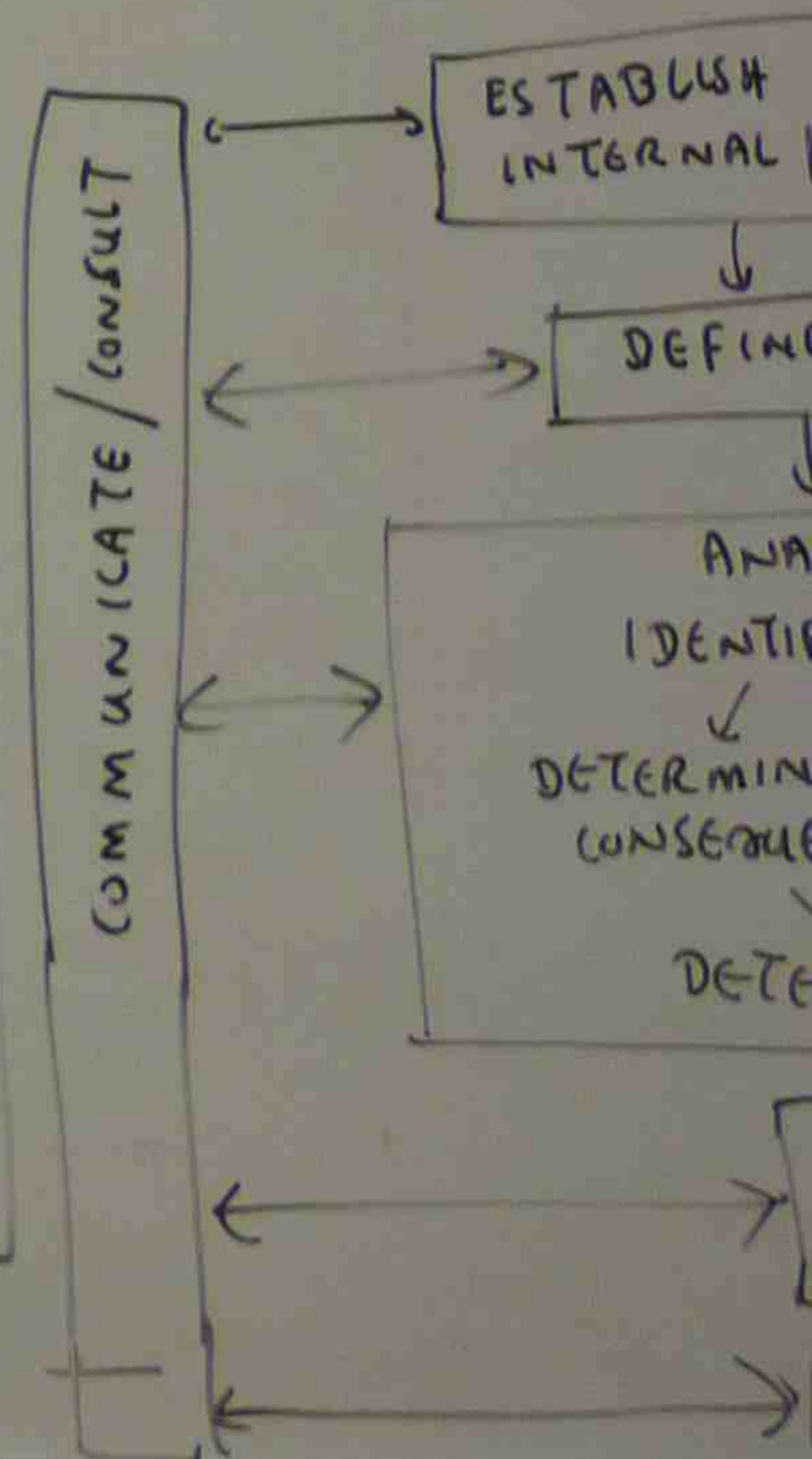
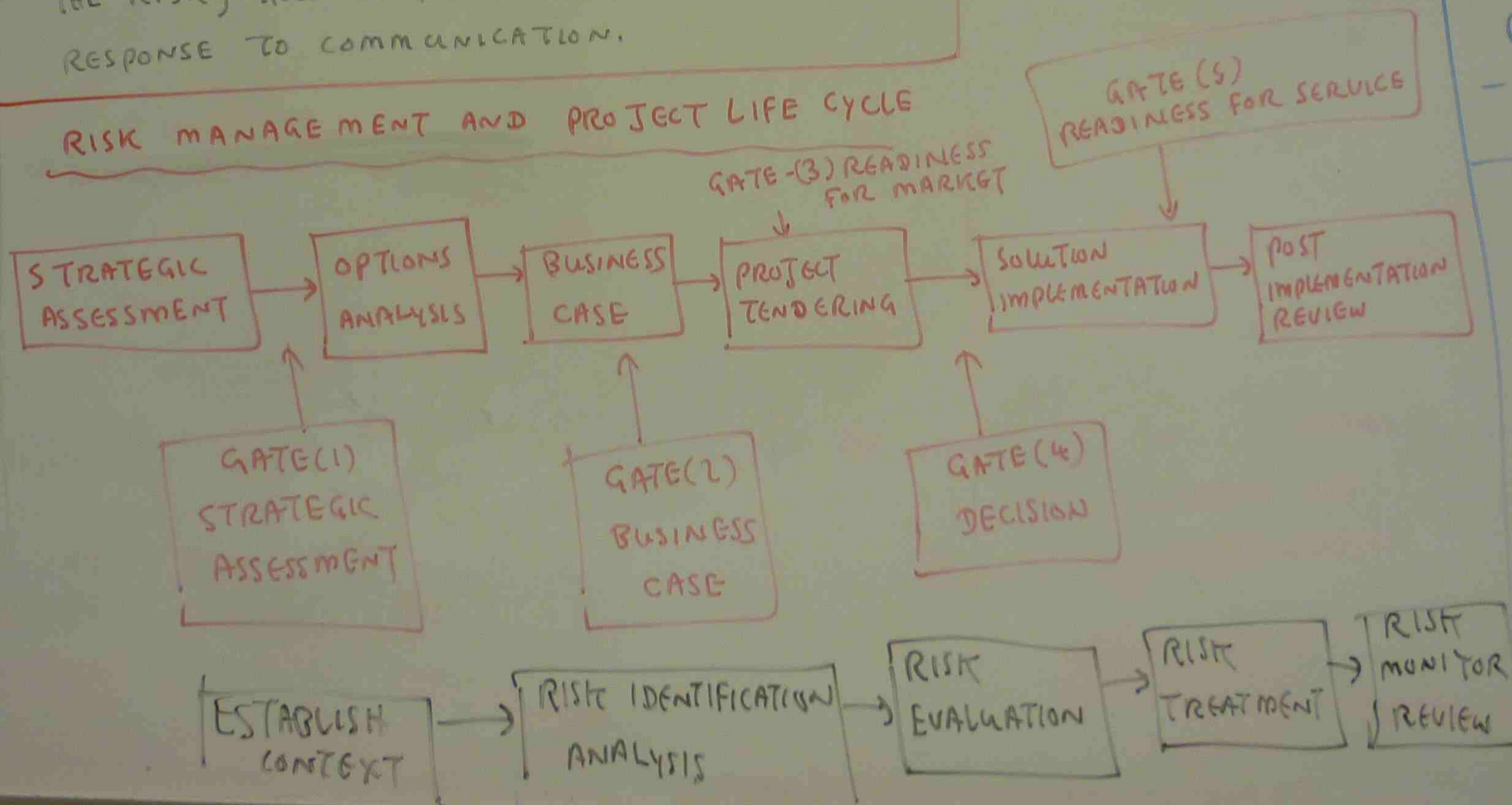
RISK COMMUNICATION

RISK COMMUNICATION IS A COMPLEX CROSS-DISCIPLINARY ACADEMIC FIELD. PROBLEMS FOR RISK COMMUNICATION INVOLVE HOW TO REACH THE INTENDED AUDIENCE, TO MAKE THE RISK COMPREHENSIBLE AND RELATABLE TO OTHER RISKS, HOW TO PAY APPROPRIATE RESPECT TO THE AUDIENCE'S VALUES RELATED TO THE RISK, HOW TO PREDICT THE AUDIENCE'S RESPONSE TO COMMUNICATION.

MAIN OUTPUTS FROM RISK MANAGEMENT LIFE CYCLE ARE AS FOLLOWS

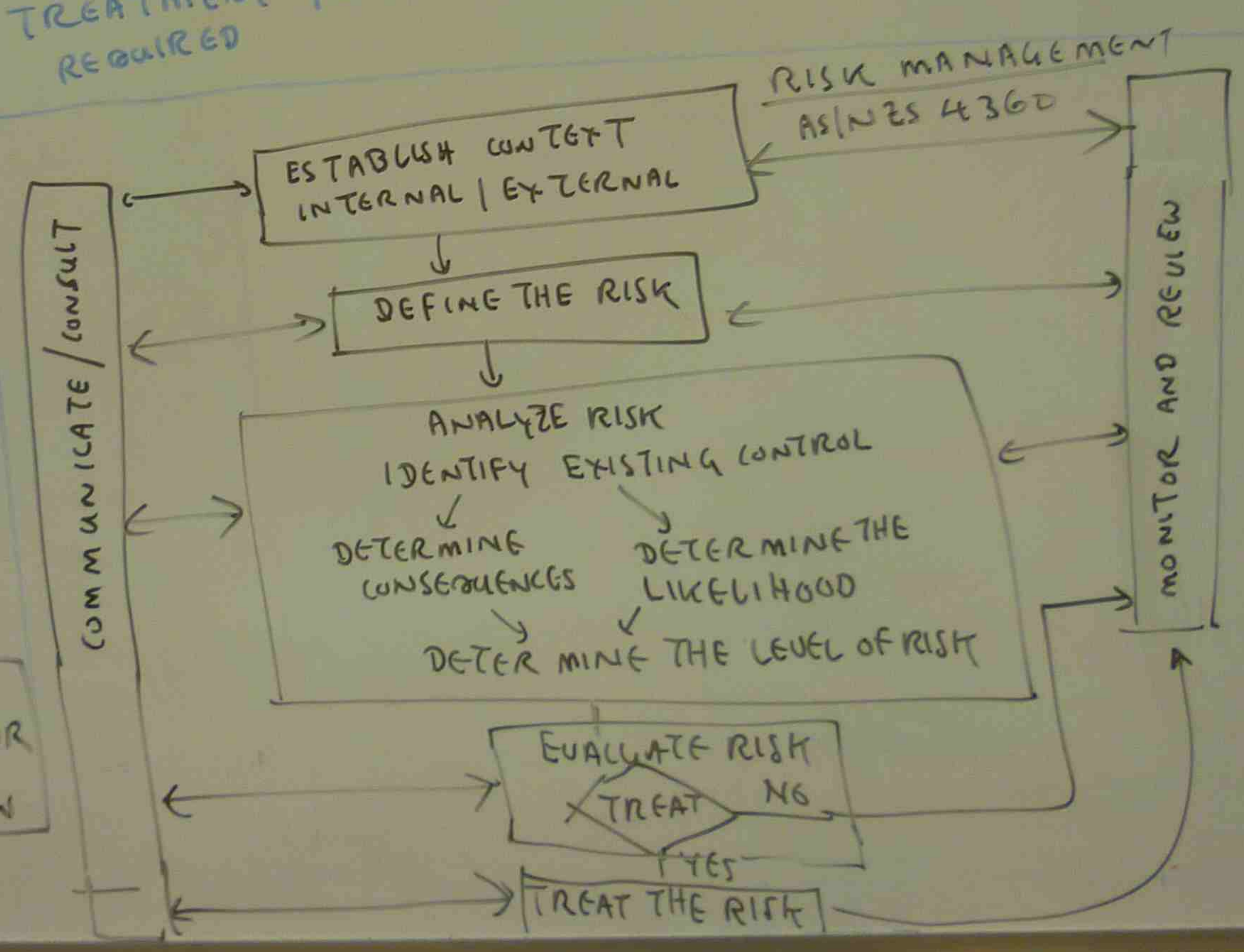
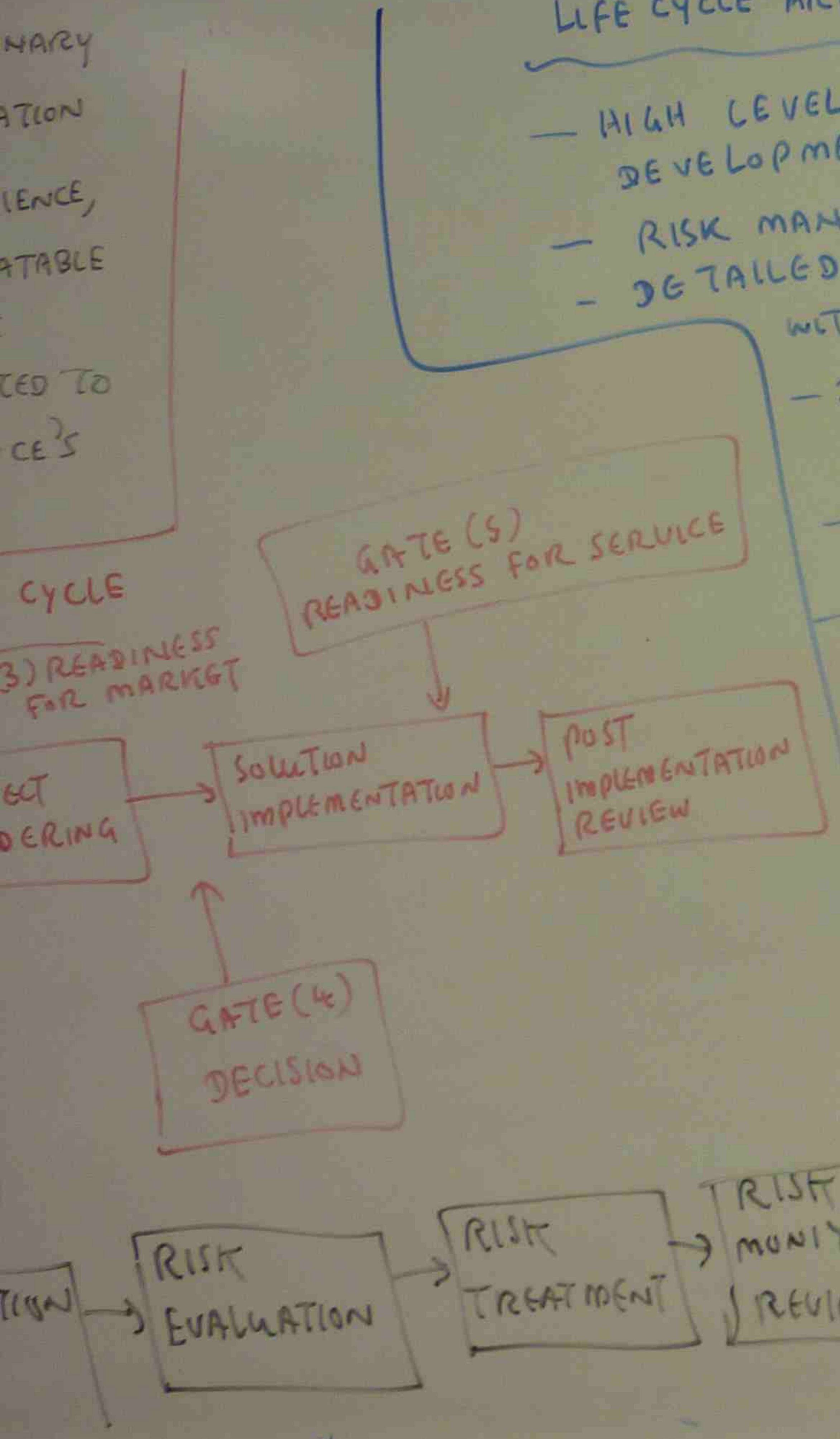
- HIGH LEVEL RISK ASSESSMENTS DEVELOPMENT
- RISK MANAGEMENT PLAN CONCLUSIONS
- DETAILED RISK ASSESSMENT FOR EACH PHASE WITH BUSINESS CASE DEVELOPMENT
- DETAILED RISK ASSESSMENT FOR EACH PHASE OF STAGE 3
- TREATMENT PLANS REQUIRED

RISK MANAGEMENT AND PROJECT LIFE CYCLE



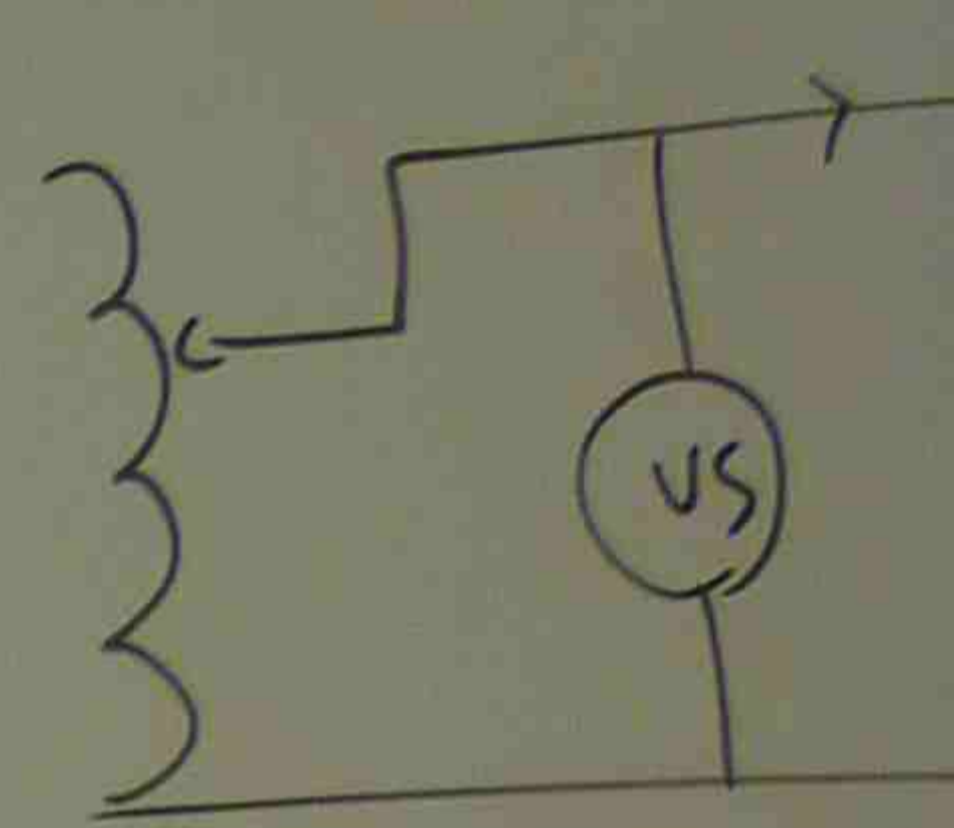
MAIN OUTPUTS FROM RISK MANAGEMENT PROCESS THROUGHOUT THE PROJECT LIFE CYCLE ARE AS FOLLOWS

- HIGH LEVEL RISK ASSESSMENTS COINCIDING WITH CONCEPT AND OPTIONS DEVELOPMENT
- RISK MANAGEMENT PLAN COINCIDING WITH OPTIONS DEVELOPMENT
- DETAILED RISK ASSESSMENT FOR THE LIFE OF THE PROJECT. COINCIDING WITH BUSINESS CASE DEVELOPMENT
- DETAILED RISK ASSESSMENT REVIEW COINCIDING WITH PROJECT PHASE OF STAGE BOUNDARIES
- TREATMENT PLANS AND OTHER IMPLEMENTATION OUTPUTS AS REQUIRED



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① TRANSMISSION



$$I_{C1} = V_S \times 2X$$

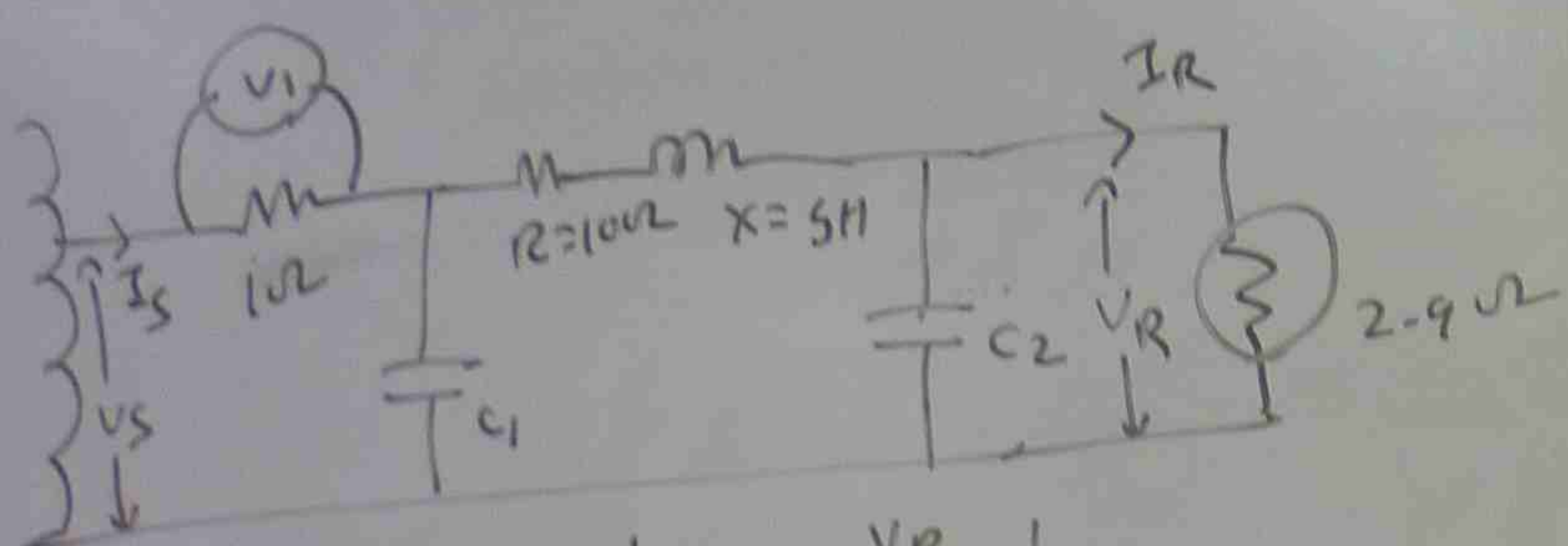
$$I_{C2} = V_R \times 2$$

MEASURE V_S

$$I_R = \frac{V_R}{400}$$

V_S	V_R

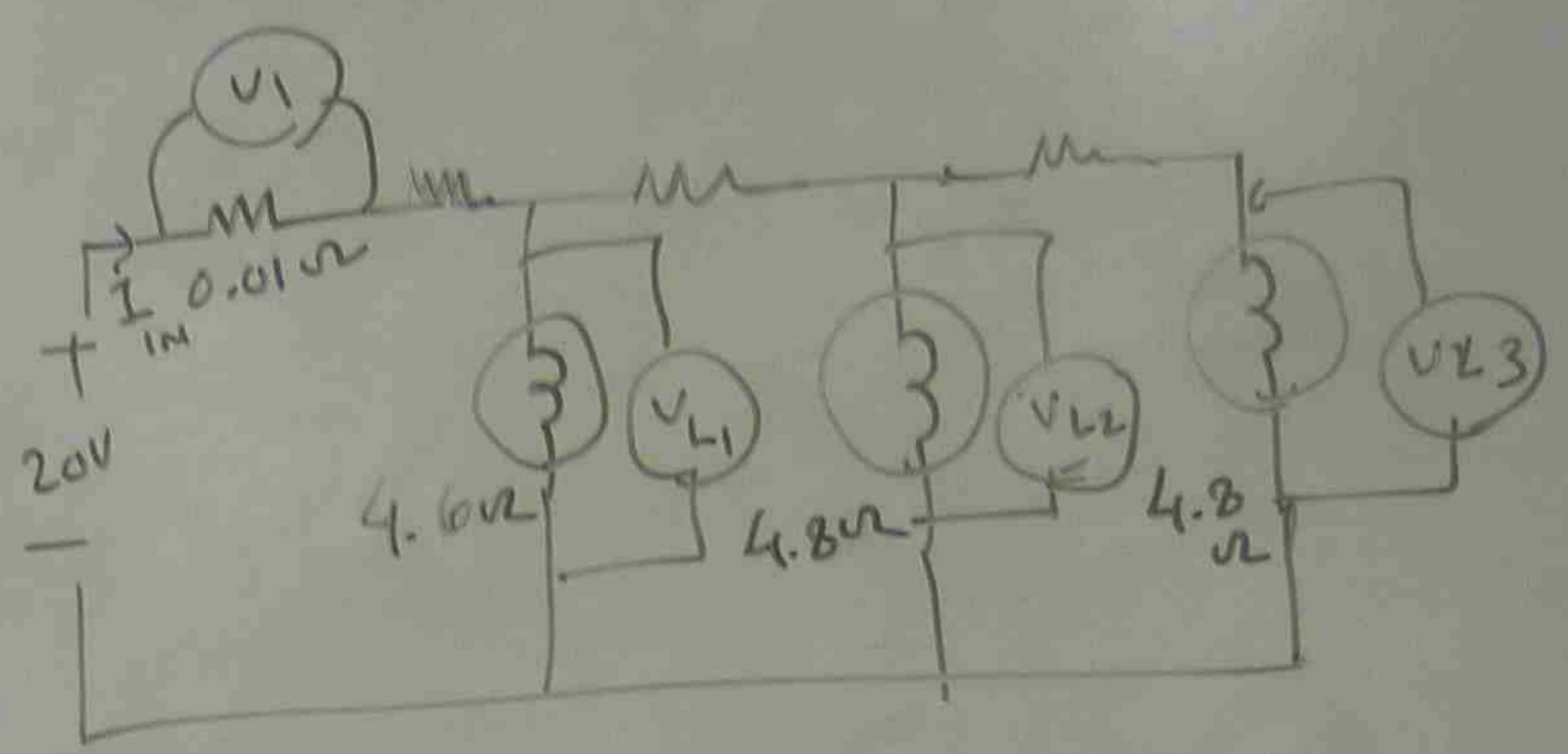
SHORT CIRCUIT



V_S	$I_S = \frac{V_1}{1\Omega}$	$I_R = \frac{V_R}{2.9\Omega}$

$B = \frac{V_S}{I_R}$, $D = \frac{I_S}{I_R}$

③ EFFICIENCY OF DC LINE



MEASURE $V_1, V_{L1}, V_{L2}, V_{L3}$

$V_1 =$
 $I_{IN} = \frac{V_1}{0.01\Omega} =$

$V_{L1} =$, $V_{L2} =$, $V_{L3} =$

$P_{IN} = V_1 \times I_{IN}$

$P_{OUT} = \frac{V_{L1}^2}{4.6\Omega} + \frac{V_{L2}^2}{4.8\Omega} + \frac{V_{L3}^2}{4.6\Omega}$

$EFFICIENCY = \frac{P_{OUT}}{P_{IN}} \times 100 \%$